

Amendments to the Claims:

The following Listing of Claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

Please add claims 88-89 to this patent application.

1-33. (canceled)

34. (previously presented) The filtering face mask of claim 68, wherein the valve seat is made from a relatively light-weight plastic that is molded into an integral one-piece body.

35. (original) The filtering face mask of claim 34, wherein the valve seat has been made by an injection molding technique.

36. (previously presented) The filtering face mask of claim 68, wherein the seal surface is substantially uniformly smooth to insure that a good seal occurs between the single flexible flap and the seal surface, and wherein the flexible flap is made from a material that is capable of allowing the flap to display a bias towards the seal surface.

37. (previously presented) The filtering face mask of claim 68, wherein the flexible flap would normally assume a flat configuration when no forces are applied to it but has a curved profile when viewed from a side elevation.

38. (original) The filtering face mask of claim 37, wherein the flexible flap is elastomeric and is resistant to permanent set and creep.

39. (original) The filtering face mask of claim 37, wherein the flexible flap is made from an elastomeric rubber.

40. (previously presented) The filtering face mask of claim 68, wherein the flexible flap has a stress relaxation sufficient to keep the flexible flap in an abutting relationship to the seal surface under any static orientation for 24 hours at 70 °C.

41. (canceled)

42. (previously presented) The filtering face mask of claim 68, wherein the flexible flap is made from a crosslinked polyisoprene.

43. (previously presented) The filtering face mask of claim 68, wherein the flexible flap has a Shore A hardness of about 30 to 50.

44. (previously presented) The filtering face mask of claim 68, wherein the flexible flap has a generally uniform thickness of about 0.2 to 0.8 millimeters.

45. (original) The filtering face mask of claim 44, wherein the flexible flap has a generally uniform thickness of about 0.3 to 0.6 millimeters.

46. (original) The filtering face mask of claim 45, wherein the flexible flap has a generally uniform thickness of about 0.35 to 0.45 millimeters.

47. (previously presented) The filtering face mask of claim 68, wherein the one free portion of the flexible flap has a profile that comprises a curve when viewed from the front, which curve is cut to correspond to the general shape of the seal surface.

48. (original) The filtering face mask of claim 47, wherein the flexible flap is greater than one centimeter wide.

49. (original) The filtering face mask of claim 48, wherein the flexible flap is 1.2 to 3 centimeters wide and is about 1 to 4 centimeters long.

50. (previously presented) The filtering face mask of claim 68, wherein the stationary segment of the peripheral edge of the flexible flap includes about 10 to 25 percent of the total peripheral edge of the flexible flap, with the remaining 75 to 90 percent being free to be lifted from the seal surface.

51. (previously presented) The filtering face mask of claim 68, wherein the valve seat includes a flange that provides a surface onto which the exhalation valve can be secured to the mask body, and wherein the flange extends 360 degrees around the valve seat where the valve seat is mounted to the mask body.

52. (previously presented) The filtering face mask of claim 68, wherein the flexible flap is positioned on the valve such that exhaled air is deflected downward during an exhalation when the filtering face mask is worn on a person.

53. (previously presented) The filtering face mask of claim 68, wherein the mask body is cup-shaped and comprises (1) at least one shaping layer for providing structure to the mask, and (2) a filtration layer, the at least one shaping layer being located outside of the filtration layer on the mask body.

54. (previously presented) The filtering face mask of claim 68, wherein a high percentage of the exhaled air is purged through the exhalation valve.

55. (previously presented) The filtering face mask of claim 68, wherein at least 60 percent of the total airflow flows through the exhalation valve under a normal exhalation test.

56. (original) The filtering face mask of claim 55, wherein at least 73 percent of the total airflow flows through the exhalation valve under a normal exhalation test.

58. (previously presented) The filtering face mask of claim 68, wherein the exhalation valve is positioned on the mask body substantially opposite to a wearer's mouth, and wherein the flexible flap is mounted to the valve seat in cantilever fashion.

59. (Canceled)

60. (previously presented) The filtering face mask of claim 68, wherein the shape of the orifice does not wholly correspond to the shape of the seal surface.

61. (previously presented) The filtering face mask of claim 68, wherein the valve cover has an opening that is disposed directly in the path of fluid flow when the free portion of the flexible flap is lifted from the seal surface during an exhalation.

62. (previously presented) The filtering face mask of claim 61, wherein the opening in the valve cover is approximately parallel to the path traced by the second end of the flexible flap during its opening and closing.

63. (original) The filtering face mask of claim 62, wherein the valve cover and its opening direct exhaled fluid flow downwards when the mask is worn on a person.

64. (original) The filtering face mask of claim 63, wherein the valve cover has fluid-impermeable sidewalls.

65. (original) The filtering face mask of claim 63, wherein the opening in the valve cover is at least the size of the orifice in the valve seat.

66. (previously presented) A filtering face mask that comprises:
- (a) a mask body that is adapted to fit over the nose and mouth of a wearer; and
 - (b) an exhalation valve that is attached to the mask body, the exhalation valve comprising:
 - (1) a valve seat that comprises:
 - (i) a seal surface;
 - (ii) an orifice that is surrounded by the seal surface; and
 - (iii) a flap-retaining surface; and
 - (2) a single flexible flap that has a stationary portion and only one free portion and a peripheral edge that includes a stationary segment and a free segment, the stationary segment of the peripheral edge being associated with the stationary portion of the flap so as to remain at rest during an exhalation, and the free segment being associated with the one free portion of the flexible flap so as to be lifted away from the seal surface during an exhalation, the free segment also being located below the stationary segment when the filtering face mask is worn on a person and viewed from the front; and
 - (3) a valve cover that is disposed over the valve seat and that comprises a surface that mechanically holds the flexible flap against the flap-retaining surface, wherein the flexible flap is held against the flap-retaining surface in a location and position relative to the seal surface such that the flap is pressed towards the seal surface in a substantial abutting relationship therewith under any orientation of the valve when a fluid is not passing through the orifice.

67. (previously presented) The filtering face mask of claim 66, wherein the valve cover is secured to the valve seat by a friction fit to a wall of the valve seat.

68. (currently amended) A filtering face mask that comprises:
- (a) a mask body that is adapted to fit over the nose and mouth of a wearer; and
 - (b) an exhalation valve that is attached to the mask body, the exhalation valve comprising:
 - (1) a valve seat that comprises:
 - (i) a seal surface;
 - (ii) an orifice that is surrounded by the seal surface; and
 - (iii) a flap-retaining surface; and
 - (2) a single flexible flap that has a stationary portion and only one free portion and a peripheral edge that extends 360° about the flap and that includes a stationary segment and a free segment, the stationary segment of the peripheral edge being associated with the stationary portion of the flap so as to remain at rest during an exhalation, and the free segment being associated with the one free portion of the flexible flap so as to be lifted away from the seal surface during an exhalation, the free segment also being located below the stationary segment when the filtering face mask is worn on a person and viewed from the front; and
 - (3) a valve cover that is disposed over the valve seat and that comprises a surface that holds the flexible flap against the flap-retaining surface in a location and position relative to the seal surface such that the flap is pressed towards the seal surface in an abutting relationship therewith, when a fluid is not passing through the orifice, under any orientation of the valve, the point where the flexible flap is mechanically held against the flap retaining surface being located off center relative to the flap.

69. (previously presented) The filtering face mask of claim 68, wherein the valve cover is secured to the valve seat by a friction fit to a wall of the valve seat.

70. (previously presented) The filtering face mask of claim 68, wherein the valve cover has fluid-impermeable opposing sidewalls that support a fluid impermeable ceiling, and wherein the valve cover has an opening that is disposed directly in the path of fluid flow, the fluid-impermeable sidewalls and the ceiling and the positioning of the opening in the valve cover causing fluid flow to be directed downwardly away from a wearer's eyes during an exhalation when the mask is worn by a person.

71. (previously presented) The filtering face mask of claim 70, wherein the flexible flap is mechanically clamped between the surface on the valve cover and the flap-retaining surface.

72. (previously presented) The filtering face mask of claim 68, wherein the flap-retaining surface is not disposed substantially in the path of the exhale flow stream.

73. (previously presented) The filtering face mask of claim 68, wherein the orifice includes a plurality of openings, which plurality of openings are disposed within the orifice beneath where the flexible flap is mounted to the valve seat when viewing the filtering face mask from the front in an upright position.

74. (previously presented) The filtering face mask of claim 73, wherein the exhaled air passes primarily through the plurality of openings within the orifice during an exhalation by a wearer of the mask.

75. (previously presented) The filtering face mask of claim 74, wherein the flap-retaining surface is located outside the region defined by the plurality of openings.

76. (previously presented) The filtering face mask of claim 66, wherein the flap-retaining surface is spaced from the nearest portion of the orifice at about 1 to 3.5 millimeters.

77. (previously presented) The filtering face mask of claim 66, wherein the flap-retaining surface is spaced from the nearest portion of the orifice at about 1.5 to 2.5 millimeters.

78. (previously presented) The filtering face mask of claim 66, wherein the flexible flap has a generally uniform thickness and is cut in the general shape of a rectangle such that the free segment of the peripheral edge corresponds to the shape of the seal surface where the free portion makes contact therewith.

79. (previously presented) The filtering face mask of claim 78, wherein the flexible flap is about 1.2 to 3 centimeters wide and is about 1 to 4 centimeters long and has a thickness of about 0.2 to 0.8 millimeters, and wherein the stationary segment of the peripheral edge is about 10 to 25% of the total peripheral edge and the free segment is about 75 to 95% of the peripheral edge.

80. (previously presented) The filtering facemask of claim 79, wherein the flexible flap is about 2.4 centimeters wide.

81. (previously presented) The filtering face mask of claim 66, wherein the valve cover is secured to the valve seat by ultrasonic welding or an adhesive and wherein the flexible flap is a sheet having a generally uniform thickness of about 0.3 to 0.6 millimeters.

82. (previously presented) The filtering face mask of claim 81, wherein the flexible flap has a generally uniform thickness of 0.35 to 0.45 millimeters.

83. (previously presented) The filtering face mask of claim 66, wherein the flexible flap is curved over the orifice.

84. (previously presented) The filtering face mask of claim 83, wherein the orifice includes a plurality of openings, which plurality of openings are disposed beneath where the

flexible flap is mounted to the valve seat when viewing the filtering face mask from the front in an upright position.

85. (previously presented) The filtering face mask of claim 84, wherein the exhaled air passes primarily through the plurality of openings within the orifice during an exhalation by a wearer of the mask.

86. (previously presented) The filtering face mask of claim 85, wherein the flap-retaining surface is located outside the region defined by the plurality of openings.

87. (previously presented) The filtering face mask of claim 86, wherein the flap-retaining surface is spaced from the nearest portion of the orifice at about 1 to 3.5 millimeters.

88. (new) The filtering face mask of claim 66, wherein the stationary segment of the peripheral edge of the single flexible flap when viewed from the front includes a first linear segment, wherein the free segment of the peripheral edge includes first and second side edges that include second and third linear segments, and wherein each of the second and third segments include a rounded segment that extends therefrom.

89. (new) The filtering face mask of claim 68, wherein the stationary segment of the peripheral edge of the single flexible flap when viewed from the front includes a first linear segment, wherein the free segment of the peripheral edge includes first and second side edges that include second and third linear segments, and wherein each of the second and third segments include a rounded segment that extends therefrom.